DOCUMENT RESUME

ED 339 309 HE 025 094

AUTHOR Hossler, Don; And Others
TITLE What Really Counts: An Investigation of the Factors Associated with the Perceived Importance of College Attributes among High School Senior. ASHE Annual Meeting Paper.
INSTITUTION Indiana Coll. Placement and Assessment Center, Bloomington.
SPONS AGENCY Lilly Endowment, Inc., Indianapolis, Ind.
PUB DATE Nov 91
NOTE 55p.; Paper presented at the Annual Meeting of the Association for the Study of Higher Education (Boston, MA, October 31-November 3, 1991).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Academic Aspiration; *College Choice; Decision Making; Family Characteristics; Grade Point Average; Higher Education; High Schools; *High School Seniors; *Institutional Characteristics; Parent Aspiration; Parent Influence; *Postsecondary Education; Racial Differences; Sex Differences; Student Characteristics
IDENTIFIERS *ASHE Annual Meeting; Indiana

ABSTRACT

This study examined a longitudinal data set (9th through 12th grade students from Indiana) to pose questions about the importance students place on certain college and university attributes as part of their college choice process. Using factor analysis, analysis of variance, and discriminant analysis on data about a representative sample of 110 students, the study established a series of discrepancy scores to indicate the extent to which a student ideally believed an attribute was important to them versus the extent to which the student believed the attribute was actually present in their first choice of institution. Results found that background (family/student) characteristics, others with whom the student talked about college plans, sources of information about institutions, and activities to learn about colleges, affected different institutional attributes in different ways. Although some background variables mattered on all attributes, they had the most effect on attributes defining the location of the college and interpersonal involvement characteristics. Neither a student's grade point average nor educational aspiration affected any of the attributes. The significant others that students talked to about their plans and aspirations affected all measures of the importance of attributes while informational and learning activities affected all but one. Included are four tables, one figure and 57 references. (Author/JB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED339309

What Really Counts: An Investigation of the Factors Associated with the Perceived Importance of College Attributes Among High School Seniors

Don Hossler
Associate Professor
Educational Leadership & Policy Studies
Indiana University

Nick Vesper
Doctoral Candidate
Educational Leadership & Policy Studies
Indiana University

John Braxton
Associate Professor
Higher and Postsecondary Education Program
Syracuse University

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Don Hossler

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Presented at 1991 Annual Meeting of the Association for the Study of Higher Education, Boston, MA., October 31-November 3, 1991

This research was supported by a grant from the Lilly Endowment. Additional cooperation and technical assistance was provided by the Indiana College Placement and Assessment Center. ICPAC is a comprehensive state funded service that, under the direction of the Indiana Commission for Higher Education, encourages postsecondary participation, educational attainment, career development.

The authors would like to thank Gary Bouse and Jack Schmit for their assistance with this study.

HE 025 094

BEST COPY AVAILABLE

ASHE

Texas A&M University
Department of Educational
Administration
College Station, TX 77843
(409) 845-0393

ASSOCIATION FOR THE STUDY OF HIGHER EDUCATION

This paper was presented at the annual meeting of the Association for the Study of Higher Education held at the Park Plaza Hotel & Towers in Boston, Massachusetts, October 31-November 3, 1991. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with the research of higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

What Really Counts: An Investigation of the Factors Associated with the Perceived Importance of College Attributes Among High School Seniors

ABSTRACT

This study examined a longitudinal data set (9th through 12th grade) to pose questions about the importance students place on certain college and university attributes as part of the college choice process. Using factor analysis, ANOVAs and discriminant analysis on a representative sample of 110 students, the study found that background (family/student) characteristics, significant others, sources of information about institutions, and activities to learn about colleges affect different institutional attributes in different ways. Although some background variables mattered on all attributes, they had the most affect on attributes defining the location of the college and interpersonal involvement characteristics. Neither a student's GPA nor educational aspirations affected any of the attributes. Significant others affected all measures of the importance of attributes while informational and learning activities affected all but one.

What Really Counts: An Investigation of the Factors Associated with the Perceived Importance College Attributes Among High School Seniors

Introduction and Purpose

Each year colleges and universities spend millions of dollars to recruit and enroll high school graduates. Some admissions offices employ sophisticated market research techniques to analyze their markets; these offices, however, are in the minority. Most admissions offices rely on intuition and past experience to inform their marketing and recruitment activities. Admissions offices often fail to develop a profile of potential students who are most likely to be attracted to specific types of institutions. In addition, they fail to recognize that college selection is a multistage process. As students are attempting to determine what college to attend they are simultaneously gathering more information about schools and in the process of forming an image of each college or university they are seriously considering (Hossler, Braxton, and Coopersmith, 1989: Schmit, 1991). As a result marketing strategies may need to be tailored to a changing set of student information needs (Dolence, 1991; Hossler, Bateman and Clark, in press). A lack of insights into the characteristics of their student markets and the image of their college among students results in an inefficient allocation of scarce resources at many colleges and universities. An enhanced understanding of the relationships between student and parental characteristics, and the influence they exert on the institutional attributes which students value will permit admissions officers and enrollment

managers to devise more effective and efficient marketing strategies.

Equally important, an enhanced understanding of these relationships can offer insights into how students formulate images of institutions and extend our understanding of the phenomenon of student college choice. Most investigations of the choice stage of the student college choice process are single institutional studies and not longitudinal in nature. These studies typically focus on specific institutional characteristics and their role in influencing why students enrolled, or did not enroll, in the college or university. This line of research fails to shed light on important aspects of the choice stage. For example, we have little understanding of roles played by parents, friends, teachers, and counselors in shaping students' final choices of colleges. Similarly we have few insights into how students weight a variety of institutional characteristics as they prepare to select the school into which they will matriculate. Several studies have concluded that student perceptions of quality is perhaps the most important single influence upon a student's final college choice (Hossler, Braxton and Coopersmith, 1989). However, quality can be a relative term, when a student who enrolls in Brown University and another who enrolls at State Regional Tech both indicate that institutional quality was an important factor, we can conclude that each student defines quality differently and relative to their aspirations. This longitudinal study of the factors associated

with the perceived importance of college attributes among high school seniors will shed light on these important theoretical and applied questions.

Review of Related Literature

During the past ten years an abundance of research on the college selection process of high school students has been published (see for example Chapman and Jackson, 1987; Litten, 1989; Maguire and Lay, 1981; and Muffo, 1987). These studies, examine the relationships between student and family characteristics and the importance students, and in some cases parents, attach to an array of institutional characteristics. Since this study examines the relationships between student characteristics, parental characteristics, and the activities in which students engage during their college selection process, we have limited this literature review to studies which are similar in focus and design. Litten and Hall (1989) analyzed the ratings of institutional attributes for a sample of high ability students in four metropolitan areas. They compared the relative importance which students and their parents attach to an array of institutional attributes. The authors found variation in the importance of indicators among students and parents on the basis of gender, student ability, student aspirations, etc. Using a sample of high ability students, Chapman and Jackson (1987) studied the effects of background characteristics, student perceptions of colleges, relative importance of institutional

characteristics and net cost upon students' choices of colleges to attend. They surveyed students at the start of their senior year in high school and in the late spring after the students had made their matriculation decisions. They found that perceptions of institutional characteristics and cost were important determinants of where students enrolled. Kuntz (1987) used discriminant analysis to examine the structure of students' preferences for an array of institutional attributes. The sample was drawn from within commuting distance of a selected group of colleges and universities in New York City. Kuntz compared these with the ideal preferences of students in the sample with the perceived characteristics of a selected group of colleges and universities in New York City. A number of other studies have also been conducted which report the relative importance of institutional characteristics to a sample of students. In the aggregate they present a consistent picture of the institutional attributes which students consider important when selecting colleges. These attributes, in rank order, include: special academic programs, tuition costs, financial aid availability, general academic reputation/general quality, location (distance from home), size and social atmosphere (Douglas et al, 1983; Bowers and Pugh, 1973; Dahl, 1982; Keller and McKewon, 1984; Konnert and Giese, 1987; Lay and Maguire, 1981; Litten, 1979; Litten, et. al., 1983; Stewart, et. al. 1987; Chapman and Jackson, 1987; Litten and Hall, 1989). The findings from these studies, and in many cases items from the instruments developed

for these investigations, were used to develop the surveys used in this research.

Although such studies have added to our understanding of the college selection process, they are limited for a number of reasons. Many of the studies have been conducted at single institutions and used only the institutional applicant pools. Those that have included broader samples have generally included only high ability students (see for example Litten, Sullivan, and Brodigan, 1983; Chapman and Jackson, 1987). In addition, many of these investigations have relied on a single survey, relied upon secondary data analysis, or at best utilized designs which gathered data at two or more time periods only during students' senior year in high school. Furthermore, most of these studies have used single measures of institutional attributes in which students were asked to rate the relative importance of a set of institutional characteristics.

Despite the abundance of research on the college selection process these limitations leave a number of unanswered questions. Which student and family characteristics, as well as student activities during the college selection process, influence the weight which students attach to institutional attributes? Do institutional marketing efforts influence the importance of institutional attributes? From a longitudinal perspective, what factors influence the images which students develop of individual colleges and universities? Is the nature of the final stage of the college selection process linear, becoming increasingly

narrow and predictable as students get closer to their decision? Additionally, do parents, friends, teachers, and high school guidance counselors influence the importance which students attach to institutional attributes as they approach the selection of the college or university in which they will enroll?

Study Focus and Approach

This study includes a representative sample of high school students from the State of Indiana. Data for this investigation are drawn from a five year longitudinal study of the college choice process. The study employs factor analysis, discriminant analysis and ANOVAs to examine how student and family background characteristics, student educational aspirations, student information about colleges, and student activities influence the importance that students attach to the attributes of colleges during their college selection process. Drawing upon existing research we propose a conceptual framework to explain the factors which influence the perceived importance of college attributes among high school seniors.

The dependent measures are a series of discrepancy scores. Each student was asked to indicate the extent to which they ideally believed an attribute was important to them in selecting a college or university, and the extent to which the student believed the attribute is actually present in his/her first choice institution. The discrepancy scores are the differences of the responses to the two questions, each of which listed 19 different institutional attributes. The questions were on a

survey sent to high school seniors who participated in this study. Once the discrepancy scores were computed, a factor analysis was run on the 19 scores. The scores were reduced to four factors which are discussed in more detail later in this paper.

Using these four discrepancy factors as the dependent variables, the following questions were examined:

1. Are student and family background characteristics associated with the importance students attach to different institutional attributes for their ideal and actual college choices?
2. Are the educational aspirations of students and parents associated with the importance students attach to different institutional attributes for their ideal and actual college choices?
3. Is the amount of information about colleges and universities which students have available or can seek out associated with the importance students attach to different institutional attributes for their ideal and actual college choices?
4. Do parents, friends, teachers, and high school guidance counselors influence the importance students attach to different institutional attributes for their ideal and actual college choices?
5. If we consider the importance students place on institutional attributes as part of the college choice process, how do factors influencing the attributes change over time?

Overall, we wanted to be able to describe students at different levels of discrepancy scores and to determine what characteristics might explain those differences.

Conceptual Framework

The model which we developed and the variables selected are taken from existing research on student college choice. The model is based on student characteristics, resources and activities primarily internal to the family, and resources and activities primarily external to the family. Resources are agents from whom students can get information about college or support for their aspirations; activities are things the student can do to get information. We examined the following relationships.

Discrepancy

between characteristics of an ideal institution and the extent to which these characteristics are present in an actual institution over nineteen attributes

is a function of

Student Characteristics

educational aspirations, high school grades, gender, and race

and

Internal resources

talking to parents and friends about college, parental aspirations for the student, and family socio-economic

status as measured by family income and parental education levels

and

External resources

talking to high school counselors and others outside of the circle of family and peers, seeking information about colleges from different sources, and the level of engagement of students in college selection activities.

Based on the work of Kuntz (1987), the dependent discrepancy variables were defined as the absolute value of the difference between the student's ideal response and the student's response for her or his first choice college. The permitted responses, ranges of values, and questions are:

Ideal Choices - This trait is,
4 - very important
3 - somewhat important
2 - important
1 - not important
0 - not applicable or undecided

School Choice - This trait is present,
4 - to a great extent
3 - to some extent
2 - to an extent
1 - to a small extent
0 - not applicable or don't know

The institutional traits listed include,

Advanced equipment, computers & libraries
Faculty are known to be good teachers
School has lots of activities in which students participate
School has many large buildings
Graduates get good jobs
What you learn is related to the world of work
Most of the classes are small
Students get a good general education
Graduates are satisfied with their experiences
There are students from many different backgrounds
The school has good athletic teams
Students improve their reading, writing, & thinking skills

Graduates get into the graduate schools of their choice
School offers many different majors and programs
Faculty are more interested in teaching than research
Students learn a lot in their majors
Student learn a lot about the jobs they will be doing
The campus is close to my home
The school has good athletic facilities

The independent variables selected are consistent with our model and the literature on student aspirations and college choice. Table 1 summarizes the independent variables and their values. The variables are marked as to the grade when they were answered (9th, 10th, 11th, or 12th). We specifically included informational variables that were asked repeatedly in a number of grades to find out how the patterns of interaction with discrepancy scores changed over time. Each of the discrepancy scores ranged from 0 to 4 (0 equals no discrepancy, 4 equals maximum discrepancy). The variable names and literature sources are described below. The terms in brackets are the variable names we assigned for actual SPSS runs.

1. Student Ability - (Bishop, 1977; Carpenter and Fleishman, 1987; Hause, 1969; Hossler and Stage, in press; Jackson, 1978; Jackson, 1986; Manski and Wise, 1983; Mare, 1980; Peters, 1977; Rumberger, 1982; Tillery, 1973; Tuttle, 1981; Yang, 1981); [GPA].

2. Student Educational Expectations - (Carpenter and Fleishman, 1987; Dahl, 1982; Gilmour, et al., 1978; Hossler and Stage, in press; Jackson, 1978; Parents, Programs, and Pennsylvania Student Plans, 1984); [SEDEXP].

3. Ethnicity - (Brown, 1982; Ekstrom, 1985; Hossler, Schmit and Vesper, 1989, Jackson, 1986; Manski and Wise; 1983 Tuttle, 1981); [RACE].

4. Gender - (Carpenter and Fleishman, 1987; Elsworth, 1982; Hossler and Stage, 1987; Stage and Hossler, 1988); [SEX].

5. Parental income - (Alexander, 1981; Corrazini, et al., 1972; Ekstrom, 1985; Elsworth, et al., 1982; Gilmour, et al., 1978; Hause, 1969; Hossler and Stage, in press; Jackson, 1978; Perlman, 1973; Sewell, et al. 1972; Tuttle, 1981; Yang, 1981); [PINCOME].

6. Parental Educational Levels - (Carpenter and Fleishman, 1987; Gilmour, et al., 1978; Hossler and Stage, 1987; Hossler and Stage, in press; Jackson, 1986; Manski and Wise, 1983; Solmon and Taubman, 1973; Trent and Medsker, 1967; Stage and Hossler, 1988; Tuttle, 1981; Yang, 1981); [MEDUC = mother's education and FEDUC = father's education].

7. Parental Encouragement - (Carpenter and Fleishman, 1987; Conklin and Dailey, 1981; Ekstrom, 1985; Gilmour, et al., 1978; Hossler, Schmit, Vesper, and Bouse, 1990; Hossler and Stage, in press; Murphy, 1981; Parents, Programs and Pennsylvania Students, 1984; Russell, 1980; Stage and Hossler, 1988; Soper, 1971; Tillery, 1973). Parental encouragement was measured by the following variables: parental educational expectations for their student [PEDEXP], whether students report talking to their parents about their plans after high school during the students' freshman year [TALK1], whether students report talking to their

parents about their plans after high school during the students' sophomore year [STALK1], and whether students report talking to their parents about their plans after high school during the students' junior year [MTALK1].

8. Peer Support and Encouragement - (Carpenter and Fleishman, 1987; Coleman, 1966; Falsey and Heyns, 1984; Hossler, Schmit, Vesper, and Bouse, 1990; Jackson, 1986; Russell, 1980; Tillery, 1973). Similar to the measures of parental encouragement, peer support and encouragement were measured by whether students reported talking to their friends about their plans after high school during their freshman year [TALK2], sophomore year [STALK2], and junior year [MTALK2].

9. Encouragement from High School Counselors and Teachers - (Ekstrom, 1985; Falsey and Heyns, 1984; Lewis and Morrison, 1975; Tillery, 1973; Parents, Programs and Pennsylvania Students, 1984). Like the measures of parental and peer support and encouragement, encouragement from teachers and counselors was measured by whether students reported talking to counselors [TALK4] and teachers [TALK3] during their freshman year, and to counselors [STALK4] and teachers [STALK3] during their sophomore year, and to counselors [MTALK4] and teachers [MTALK3] during their junior year.

10. Role of Information and Sources of Information - (Hossler, Vesper, and Bouse, 1991; Hossler, Schmit, and Bouse, 1991). The role of information was measured using the following variables. The number of schools which students indicated they

were considering attending during their senior year in high school [CNT12]: we made the assumption that students who listed more schools had more information about colleges and universities. A count of the number of sources of information about colleges which students indicated they had during their sophomore year [SOURCES]. And the number of activities students indicated they were engaged in to learn more about colleges during their junior year [COLLRN].

Methods & Data

The data set for this study is part of a longitudinal study of student college choice funded by the Lilly Endowment and the Indiana College Placement and Assessment Center (ICPAC). Using a cluster sampling technique (Walker and Burnhill, 1988; Babbie, 1973) an initial sample of 5,000 Indiana high school freshmen was selected in 1986. Both the students and their parents have been surveyed two times each year from 1986 through the spring of 1990. Response rates have ranged from a high of 64% to a low of 27%. Two telephone surveys of non-respondents have been conducted. In each instance the results indicate few differences between respondents and non-respondents. Nevertheless, it is important to acknowledge weaknesses in the sample analyzed in this study.

There were three groups of students considered in constructing the final sample. A set with an n of about 2300 students who answered the background and student characteristics

questions in the 9th grade (there was variation in the number of respondents depending on the variable); a group of students of n = 580 who answered all the discrepancy questions in the 12th grade; and the final sample of 110 students who also answered relevant questions in the 10th and 11th grades.

ANOVA. Using an analysis of variance comparing these three groups, we found:

1. Our final sample does not differ on any of the four discrepancy factors when compared to the 580 12th graders who answered all the institutional attribute questions.

2. Our final sample differed (at p=.05) from the 12th grade and the 9th grade sample on student characteristics and family background, but in no case was the difference larger than one response level (see Table 1 for the variables ranges). The mean values for the final sample were higher than for the other samples.

3. Our sample did not differ from the other groups on conversations with significant others except that our group talked slightly more to friends in the 9th grade and slightly more to high school counselors in the 11th grade than students within the other samples.

4. Finally, although our sample had slightly more sources of information about colleges (at p=.05), they did not differ from their 11th grade cohort in what activities they pursued to learn about colleges (See Table 2 for a review of the results of the ANOVAs).

Overall, then, our final sample shows a pattern of characteristics that we would associate with students most likely to go to college, but as indicated in Table 1 the students in the sample did not consist of only the high ability students in the longitudinal study. Moreover, as indicated by SEDEXP and PEDEXP, there are some students in the final sample who had no aspirations beyond high school while in the 9th grade, but who changed their minds by the 12th grade (else they would not have answered the ideal versus actual questions). Thus the analyzed students are not simply those we might automatically expect to plan to go to college. Given our interest in understanding ideal versus actual institutional characteristics as an aspect of the college choice process, this is an appropriate group to consider. We are comfortable in concluding that the final sample for this study is loosely representative of the entire total sample. However, given the differences in response rates each year and the missing data on key questions, our results may not be generalizable to all of the students in this longitudinal data set who planned to attend a college or university.

Preliminary analyses. Several sets of analyses were conducted on the data set before doing the discriminant analysis on the final sample. The results from the preliminary analyses are reported in the methods section of this paper because they were used to select the list of variables which were included in the final sets of analyses.

Factor analysis. The questions from which the discrepancy scores were computed was part of the 12th grade student survey. Based on the 580 students who responded with no missing data, a factor analysis was run on the 19 scores using the principal components method and varimax rotation. Four factors were found.

Frequency counts. Frequency counts indicated that some variables had too few responses to include in the final list of independent variables.

Significant Others. Looking at the values of the "talking" variables for significant others made us modify our original variable list. As listed in Table 1, we considered five "talk" variables for each of the grades, 9th, 10th, and 11th. Those variables indicate that a student talked to her or his parents ("talk1"), friends ("talk2"), teachers ("talk3"), high school counselors ("talk4"), or others ("talk5"). These five dichotomous variables were taken from a single question, "who do you talk to the most about your plans after high school." The question permitted the respondent to check only one significant other; thus if the student checked "Parents", she or he behaved as if they did not talk to anyone else. The "talk" variables have a value of 0, did not talk to, or a 1, did talk to. In order to be included in the final sample each student must have talked to one of the five. Since each of the five variables can have a value of 0 or 1, and only one of the five can be a "talked to" with a value of 1, they must sum to 1 as well.

For each grade, there were some categories of significant others that were conferred with so infrequently that we dropped them from consideration (see Table 1 for variable names).

1. In the 9th grade, 93% of the students talked only to parents or friends, and none talked to teachers. If a student did not talk to either parents or friends, they talked to high school counselors or others (TALK4 or TALK5) the other 7% of the time. Thus we kept only the variables TALK1 and TALK2 in the final sets of analyses.

2. In the 10th grade, the situation was similar to the 9th grade, with 92% of students talking only to parents or friends and none to teachers. We kept only the variables STALK1 and STALK2. These variables have the same relationship to talking with high school counselors and others as in the 9th grade.

3. In the 11th grade, 92% of the students talked either to the counselor or others with none of them talking to their parents. Thus we kept only the variables MTALK4 and MTALK5, and students who talked to neither of these groups, must have talked to either friends or teachers (8% of the time).

Ethnicity. Unfortunately our sample contained less than 4% minority students and this variable was dropped from the analysis. The variables with missing data most often for the minority group were college learning activities in the 11th grade (COLLRN) and many of the individual discrepancy scores from the 12th grade.

Our initial approach to relating our model to the data was to estimate four path models (one for each of the factor discrepancy scores) using LISREL (Joreskog & Sorbom, 1989) over the longitudinal data over the grades 9th, 10th, 11th, and 12th grades. Although the model had a quite good Chi-square, and the relationships of background characteristics to intervening variables was consistent with previous work on college choice (e.g., Stage & Hossler, 1989; Hossler, et al, 1990), the paths to each of the discrepancy factors were not significant at p=.05, or when significant, so small as to be of only marginal interest. Plotting the discrepancy scores against the background student and family variables showed that the relationships looked like inverted "J"s. That is, students in the middle ranges of characteristics had the lowest discrepancy scores, while students with lower characteristics the largest discrepancies, and the students of highest characteristics, middle range discrepancies. These preliminary findings suggest that the final stage of the college choice process is not linear and is complex. This in itself is an interesting observation and led to the consideration of discrete rather than continuous discrepancy factors.

Once it became clear that students' decision making about college attributes was not linear we changed our analytic approach from estimating a path model to determining variables that discriminate students for each factor. We also considered ways in which we could describe students who had low, medium or high discrepancy scores, similar to Kuntz's approach. First, we

analyzed the discrepancy scores, made comparisons between various groups of students who answered an increasingly larger and more restrictive set of questions (thus reducing the sample size), and then did a discriminant analysis on a final sample of 110 students.

Results

Analysis of Discrepancy Scores

The results from the factor analysis of the discrepancy scores yielded the following results. The discrepancies grouped into four factors. We did not attempt to clearly label the factors, but we do suggest some phrases that are indicative of the components. The defining variables are listed below the factors.

FACTOR 1. Academic/Career component

Faculty are known to be good teachers
Graduates get good jobs
What you learn is related to the world of work
Students get a good general education
Graduates are satisfied with their experiences
Students improve their reading, writing, & thinking skills
Graduates get into the graduate schools of their choice
Faculty are more interested in teaching than research
Students learn a lot in their majors
Student learn a lot about the jobs they will be doing

FACTOR 2. Interpersonal Involvement component

Advanced equipment, computers & libraries
Faculty are known to be good teachers
School has lots of activities in which students participate
Most of the classes are small
There are students from many different backgrounds
Students improve their reading, writing, & thinking skills

FACTOR 3. Athletics/Campus Size component

School has many large buildings
There are students from many different backgrounds
The school has good athletic teams
The school has good athletic facilities

FACTOR 4. Location/Ease of Commute component

Advanced equipment, computers & libraries
School offers many different majors and programs
The campus is close to my home

Four new variables were created by computing the means of the discrepancies defining each factor. These variables were called FACTOR1, FACTOR2, FACTOR3, and FACTOR4, and they ranged in value from a low of 0 to a high of 4.

Comparisons of factors. For the n = 110 sample we compared each of the FACTOR1, FACTOR2, FACTOR3, and FACTOR4 scores to each other using a paired t-test. Our intention was to see how focused the students were across the factors. That is, would the students with a low score on one factor also have a low score on the other factors? Would an average student score the same across all factors?

The means for the factors were 1.21, 0.98, 1.29, and 0.86 in the order FACTOR1, FACTOR2, FACTOR3, and FACTOR4. At p=.05, the paired t-test indicated that means are ordered as

$$\text{FACTOR4} < \text{FACTOR2} < (\text{FACTOR1} = \text{FACTOR3}).$$

That is, students were focused on the Location/Ease of Commute factor but less so on Interpersonal Involvement, and higher but indistinguishable on the remaining factors Academic/Career and

Athletics/Campus Size. Thus a particular student did not respond to the four factors in exactly the same way.

Discrete analysis.

Discrete discrepancies. We re-defined each of the discrepancy factor scores (FACTOR1, FACTOR2, FACTOR3, and FACTOR4) into one of three possible values by splitting the interval [0,4] into three parts based on our understanding of what might constitute low, medium, and high discrepancy scores. The division of the interval [0,4] into three parts was not based on the number of responses over that range, but rather on our understanding a priori of where reasonable scores should be.

0: Students whose factor scores were in the lower one-fourth of the interval, from 0 to 1, were assigned a value of 0. This is a low discrepancy score.

1: Students whose factor scores were in the next one-fourth of the interval, from 1 to 2, were assigned a value of 1. This is a moderate discrepancy score.

2: Students whose factor scores were in the remaining half of the interval, from 2 to 4, were assigned a value of 2. This is a high discrepancy score.

The new factors were labeled XFACTOR1, XFACTOR2, [illegible]TOR3, and XFACTOR4, and the groups of students with possible [illegible]s 0, 1, or 2 named GROUP0, GROUP1, and GROUP2 for each facto[illegible]e will sometimes refer to these groups as being focused or

unfocused (in considering the differences of ideal and actual attributes) depending on the values 0 to 2.

Discriminant analysis.

Four discriminant analyses were run, one for each of the four discrete factors, XFACTOR1, XFACTOR2, XFACTOR3, and XFACTOR4 using as the independent variables the set (see Table 1),

GPA, SEDEXP, SEX, PEDEXP, PINCOME, MEDUC, FEDUC, TALK1, TALK2, STALK1, STALK2, MTALK4, MTALK5, CNT12, SOURCES, and COLLRN.

We assumed, and it was verified, that in each case two functions would be needed to distinguish the three groups, GROUP0, GROUP1, GROUP2 (with XFACTOR values of 0, 1, and 2 respectively). Table 3 summarizes the variables that were significant at $F < .05$ for each of the factors by the two functions, Function 1 and Function 2. (The highest significance of F was .035 for SOURCES on XFACTOR1. All others were in fact less than .030). The variables SEDEXP, GPA, CNT12, STALK1 and STALK2 were not significant for any function for any of the four factors. The variables in Table 3 are listed from most to least significant with the standardized coefficients defining the most discriminating function, Function 1, listed first.

Each of the discriminant analyses created tables of the unstandardized discriminant functions evaluated at the group centroids of each of the three groups. The group centroids represent an average or typical student who is a member of that group. Since the discriminating functions are the perpendicular

axes of a two-dimensional plane coordinate system, the centroids can be represented as three points in three different quadrants of the two-dimensional space. Each point, or typical student, is then defined by combinations of the two functions (axes) as being positive or negative. Figure 1 plots the centroids of each of the three groups (GROUP0, GROUP1, GROUP2) for all four XFACTORS. We overlaid the different functions for ease of presentation. The positions at which the centroids lie are approximate. The figure is marked to show the groupings by students who scored a 0 (low), a 1 (moderate), or a 2 (high) on the discrepancy scores for each factors.

Initially we set out to test a causal model of the factors associated with the perceived importance of college attributes. However, even though the model estimated with LISREL did not give interesting and usable results, we were still interested in exploring how **internal** and **external** resources were associated with the students' discrepancy scores. Using the intervening variables which were retained as a result of the ANOVAs, we examined relationships between these variables and position of each centroid in the discriminant analysis for the three discrepant groups (low, moderate, and high). In a broad range of low (L) to high (H), we assigned values to each of the variables (see Table 1) in order to see which combination of variables would place a student in (actually near) one of the centroids of the three groups, GROUP0, GROUP1, GROUP2. In other words we wanted to see if high ability students (GPA), or students with

more sources of information (SOURCES) were more likely to be found among the high, moderate or low discrepant groups. We did this for all four of the factors. Since the measures of the intervening variables are in some sense gross measures of constructs, we elected to assign simple values of high or low, rather than assign high, medium and low values. We were interested in examining trends, but thought it would be over-interpreting our results to identify cut-off points for high, medium, and low scores for each of the intervening variables. Thus, certain combinations of values of the variables yield different signs for the discriminating functions, and we can think that those variable values would place a student in one of the three groups. Table 4 lists the variables in this way.

Table 4 was determined from the unstandardized discriminating function coefficients. Although not reported, these coefficients have the same signs as the standardized ones, and they can be determined from Table 3. In addition, the constant terms from the unstandardized functions were, for all XFACTORs for all GROUPs, negative numbers. Deriving Table 4 is then a simple matter of choosing a LOW (L) or a HIGH (H) value for the variable which guarantees that the resulting functions will have the correct signs to place the student in the correct quadrant defining the three groups. Obviously, given the coefficients, computing various combinations of values is straightforward but tedious. Table 4 has also been marked to

show which Group (0, 1, or 2) is found by the most discriminating Function 1.

The information in Tables 3 and 4 can be used in this way: to say that Function 1 is the most discriminating means that it can clearly distinguish one of the groups from the other two, and it can do so by explaining from 62% to 77% of the variation in responses over the XFACTORs. But this would still leave two other groups to distinguish, and knowledge of the second function is needed to do this. Thus, the ways in which the variables contribute to the Functions can be thought of as defining students into a clear GROUP and then clarifying the status of remaining students into the other GROUPs.

Discussion

ANOVAs and Factor Analysis

From both a theoretical and applied perspective these findings provide some insights into the college choice process. First, XFACTOR1, the Academic/Career Component, indicates that students may equally weight high quality academic programs, and programs that lead directly to careers. This suggests students may consider a global instrumental value of college and rate institutions on this dimension, or they might specifically consider that a school will help them get a good job or get into graduate school. It is also interesting to see that a number of items that were related to student involvement and personal attention (XFACTOR2) were grouped together with academic

considerations in the factor analysis. These included: faculty are known to be good teachers, school has lots of activities in which students can participate, school has small classes, and the school has students from many different backgrounds.

Similarly, from this study, it appears that some combination of institutional size and good athletic programs is considered by high school students. This seems to support the myth at many schools that athletics are an important marketing tool for colleges and universities. Care, however, must be exercised in generalizing these findings. The state of Indiana has three large institutions with well-known athletic teams (Indiana University, Purdue University, and the University of Notre Dame). These results may be representative of the large numbers of students in the sample who planned to attend one of these institutions.

In any case these factors provide some intriguing insights into the role of institutional attributes. Most previous studies of institutional characteristics did not conduct a factor analysis, hence our understanding of how a variety of institutional characteristics might be related to each other and to students' decisions has been poorly understood.

An examination of Table 2 also provides useful insights into the college choice process for admissions officers. First, that there are no differences by the ANOVAs (at $p = .05$) across groups by SEDEXP, GPA and SEX for any XFACTOR suggests, for example, that based on gender, ability or aspirations alone, a college

recruiter can not be expected to know how well a student has focused on the characteristics of particular institutions. Thus lower ability students are no more focused than higher ability students as might be expected if it is assumed that higher ability students have more options to consider, and lower ability fewer. Student characteristics might not be useful guidelines to distinguish how well students answer the question, "Is this institution good enough?"

Second, for those variables which matter in distinguishing groups, the general pattern suggested by the ANOVAs (at $p = .05$) is that the students with the most discrepancy on each factor except the Athletic/Campus Size Component are those with the highest fixed background characteristics (PEDEXP, PINCOME, and FEDUC). Those with the lowest background characteristics have the middle range discrepancies, whereas those with the lowest discrepancies are students of middle range characteristics. An earlier study we conducted using the same data set sheds some possible light on these findings (Vesper, Hossler & Schmit, 1991). It was found that high ability and high SES students are actually less certain about which college attributes are important to them during their junior and senior years in college than low or medium ability students. This might explain why the discrepancy scores are not monotonic for the factors, at least for ability (i.e., GPA); it does not however, explain why middle income students have the lowest scores, and low income students are in the middle range on most factors.

These mixed effects are most prominent on the Interpersonal Involvement Component and the Location/Ease of Commute Component. If discrepancy scores of 1 or 2 are assumed to be representative of students that are unsure if the schools they are considering are the right match for them (and are therefore "reachable" by marketing efforts), then college recruiters would have to deal with two groups at the extremes to each other in terms of influencing variables. This might complicate the recruitment effort since marketing approaches based on, for example, SES might have to be different for the low and high groups.

Finally, the differences in interactions with significant others -- family and friends in the 9th grade, and counselors and others in the 11th -- indicate that the way in which students focus on institutions changes over time. These differences provide insights into the developmental stages of student college choice and have utility for admissions offices. Students who talk mainly to parents in the 9th grade are focused on institutional attributes defined by the Athletics/Campus Size Component but that focus becomes less sharp if they mainly talk to counselors in the 11th grade. Similarly, students who moderately deal with internal resources in the 9th grade become more focused in the 11th by moderately talking to external resources. At various points in the college choice process parents, teachers and counselors may play different roles in influencing the decisions of students.

Discriminant analysis and Tables 3, 4, and Figure 1

First we consider those variables not in Tables 3 and 4, that is, SEDEXP, GPA, CNT12, STALK1, and STALK2. These variables did not contribute to the ability of the discriminating functions to determine group membership for any XFACTOR. Thus aspirations (SEDEXP) and ability (as measured by GPA) may not influence how students relate their ideal college to the one they are considering. The students are all equally focused or unfocused and those student characteristics might not be useful to college recruiters.

Similarly, students who put down on their 12th grade college selection lists lots of schools or few schools (CNT12) are neither focused nor unfocused on school attributes. Thus students might be choosing among several schools of the same type but are still unsure if they are "good enough" or they might be listing only one school yet still be uncertain. Thus students with many choices or few choices are equally "approachable" by marketing techniques.

Knowledge of a student's stance on talking with friends or family in the 10th grade, or the converse of talking to counselors and others, is not useful to determine the student's focus on college attributes. From this view the 10th grade is a "window of opportunity." Institutional interventions may be able to influence the college options students are considering. Again, this also provides interesting insights into the stages of college choice.

In considering Tables 3 and 4, it is not obvious if the functions that discriminate the groups can be easily named, nor the obvious influences listed. We consider each of the factors in turn.

XFACTOR1. The internal resource of FEDUC has nearly the same positive influence on both functions. Hence this variable might not be useful in separating students into the focused/unfocused groups based on lowest discrepancy scores of 0 and 1. TALK2 has differential effects. Talking to friends in the 9th grade (TALK2 = 1) takes away from Function 1's discriminating power (which determines GROUP1, as in Table 4) so that students might be at the extremes of discrepancy scores, although they are more likely to be in the focused group of score 0. It goes counter to talking to counselors (MTALK4 = 1) in the 11th grade.

SOURCES of information has the strongest effect on the less discriminating Function 2, which might mean that accumulating sources of information about colleges in the 10th grade leads to being less focused on college attributes. That is, HIGH values place the student in the less focused groups, whereas HIGH values on COLLRN and TALK2 place the student in the more focused groups. This is intuitive and may, in fact, be healthy. The findings may suggest that students are listening to external sources of information and opening up their decision making process.

Overall, it does appear that for the Academic/Career Component we might consider that students remain open to suggestion from external resources as we have measured them in later grades.

XFACTOR2. The differential effects of parental education for this discrepancy score (Interpersonal Involvement Component) is startling. The signs for FEDUC and MEDUC are first of all reversed between functions, and the effects of MEDUC are almost exclusively in the least discriminating Function 2. Thus FEDUC determines a clear group membership (GROUP1 in this case) while MEDUC influences the student to move into one of the extremes. HIGH on FEDUC places the student into the less focused groups whereas a HIGH on MEDUC places them in the most focused group. In families where educational levels are high for both parents, the situation for the college recruiter could be confusing.

The gender of the student (SEX) has similar effects on both discriminating functions. Thus gender might not be a good way to distinguish how focused students are on college attributes. Given that GROUP1 is the most defined group, and that Function 1 is positive in this case (from Table 4), this might suggest that females are at the extremes of group membership, 0 or 2, and most likely at the unfocused discrepancy score of 2. Thus without knowing more about the characteristics that define group membership for XFACTOR2, college recruiters cannot approach all females in the same way.

XFACTOR3. This factor, Athletics/Campus Size Component has the fewest defining variables, and is one in which parental

support in the 9th grade might play a pivotal role. Being HIGH on all variables tends to place the student in middle GROUP1. LOW values on all three tends to place the student in the most focused GROUP0. HIGH interaction with parents early in the college selection process might make the student more "approachable" by college recruiters in later years.

XFACTOR4. This is the most complex factor. Background variables play a dominant role, in particular, PINCOME has the strongest influence on the least discriminating Function 2, which is distinguishing GROUP0 and GROUP2, and probably results in the student being in the more focused group. This may make sense. We think that the variable close to home, which may be a measure the likelihood a student will commute to school, dominates this XFACTOR4. If this is the case parental income is likely to be inversely correlated with plans to live at home. We posit that as family income increases students are more likely to be certain of their plans and also of the residential/commuter characteristics of institutions.

SOURCES of information has an equal affect on discrimination. Talking to counselors (MTALK4) in the 11th grade, however, has differential effects. Thus it might be the case that it doesn't matter how many contacts a student makes, but it might matter with whom.

Figure 1. We make only brief remarks on Figure 1. Even though we are mixing and matching different discriminant functions over

different variables which are defining the plotted group centroids, the figure together with Tables 3 and 4 tell an interesting story. Across the four XFACTORs, a college recruiter who concentrates on one group at a time (all low discrepancy scores, or all medium, or all high), has conflicting tasks. For example, to concentrate on GROUP2 over XFACTOR1 and XFACTOR2 might be reasonable since these characteristics are close to each other (in the lower left quadrant), but the other two XFACTORs are relatively far away. Thus it might take different tactics by an admissions officer to deal with different aspects of an institution even for the same focus level of students. These differences are very apparent in looking at the middle GROUP1, but less so for the focused GROUP0.

The story seems to be that within each group, focused to unfocused, it might be necessary to use different recruitment approaches -- indeed, different research approaches to thinking about the college choice process -- depending on the college attributes the student considers important. Put another way, being focused or unfocused is not a homogenous description across the importance of different college attributes.

Summary Observations

The findings pertaining to the role of parental education, sources of information, talking to teachers, and talking to counselors in reducing the discrepancy between the image of the ideal college and the college of first choice are counter-

intuitive. We might have expected that each of these intervening variables would serve to reduce the discrepancy between the ideal and the first choice college. Certainly, a prospective student who is from a family in which both the mother and father are college graduates would not only have more information about college, but would also have formed a more realistic picture of the college experience. This logic seems to be germane to the influence of a father having a college education on achieving a good match on the Academic/Career attributes of a college or university. However, a father having a college degree operates to widen the gap for Interpersonal Involvement attributes and the attributes of college pertaining to location. In contrast, having a mother who is a college graduate serves to decrease the gap between the ideal and actual college on these two sets of institutional attributes. These intriguing differences suggest the possibility that fathers and mothers differ in the type of information about college they transmit to their college bound children.

We might also expect that using a large number of sources of information concerning college might also reduce the divergence between the ideal college and the first choice college on the Academic/Career and Location/Ease of Commute categories of institutional attributes. The more a student has learned about college, the more likely the match between the ideal image of a college and the choice of a particular institution should have been achieved. For these two attributes, however, consulting a

larger number of sources increases the discrepancy. One possible explanation for this unexpected finding is that students who are uncertain about their first choice college seek additional information so as to close the gap between their perception of the ideal and their first choice college. A second interpretation is that students may be suffering from an overload of information about college and this overload may contribute to this mismatch.

If we view these findings, however, from the framework of internal and external resources as proposed in this paper, more consistent findings are evident. Talking to parents and friends (internal resources) during the 9th and 10th grades appears to result in lower discrepancy scores. Talking to teachers and counselors during the 11th and 12th grade, along with more sources of information (external resources), seems to open students up to more options, to make them less focused and to increase their discrepancy scores. Interestingly, for XFACTORs 1 & 2, increases in activities in learning more about colleges (COLLRN) tends to reduce discrepancy scores. This is just what we might hope for if we assume that students should consider an array of educational options. As students learn more about colleges and universities (SOURCES, TALK4, TALK5) they become more confused, less certain, and their discrepancy scores increase. However, in becoming more focused on what they are looking for and what schools have to offer, those students who make the effort to actively seek information about schools, make

campus visits, and so on (COLLRN), seem to become more focused and have lower discrepancy scores.

Although these interpretations do yield a few implications for college admissions practice, they also provide us with some research leads for a further understanding of the college choice process. They also have implications for high school guidance counselors, teachers, and others concerned with enhancing the selection phase of the college choice process. More research needs to be conducted which tests the various interpretations of the pattern of findings of this study.

Conclusions

This paper gives an overview of some of the standard student college choice variables that affect how focused or unfocused 12th grade students are about the attributes of colleges they are considering attending compared to what they perceive are ideal characteristics. The characteristics were broken-out over four different factors. Specifically addressing our research questions, we found that:

1. Student and family background characteristics are associated with the importance of different institutional attributes, but the kind and impact of the variables differed by factors of attributes.

2. The educational aspirations of students did not influence the importance of institutional attributes but parental expectations did matter in two of the factors.

3. The effects of parents, friends, counselors, and other significant others do influence the importance of institutional attributes. The impact of important information providers varies by factor and by the grade level (9th through 11th).

4. Talking to parents and friends in the 9th and 10th grade (internal resources) generally decreased discrepancy scores among students.

5. The amount of information students have about colleges and universities, indicated by counts of sources of information or the engaging activities done by the student, matters in three of the four factors considered. More external sources may lead to larger discrepancy scores.

6. It appears that active involvement in seeking out more information about colleges reduces discrepancy scores.

7. Over time (9th through 11th grade), the variables influencing perception of institutional attributes do change but not in simple and straightforward ways, and it depends on the factor involved. For example, talking to friends and families about college plans in the 9th and 10th grades has different affects than talking to them in the 11th and 12th grades.

Implications and Recommendations

The results of this investigation provide several important insights into the college choice process. Perhaps most importantly, during the final phase of the decision making process, when students are selecting which institutions to

seriously consider, the process appears to complex and non-linear. Student and family background characteristics, educational aspirations, internal and external sources of information, and the extent to which students are actively engaged in seeking out information and evaluating institutions interact in complex ways to influence students' decisions. This final stage of student college choice merits further study. The complex nature of this stage might require qualitative research in order to unpack and understand it in more detail.

The four factors which have been identified also have some intuitive appeal. The Academic/Career, Interpersonal Involvement, Athletic/Campus Size, and Location/Ease of Commute components do, to some extent, approximate key institutional attributes. If we draw on the frequently used, but seldom empirically validated, concept of student-institution fit[1], students appear to be making decisions on the basic determination of whether to live near home (and can therefore commute), as well as upon the more intangible academic and social attributes of an institution. However, more research which employs factor and discriminant analysis on college characteristics should be conducted to explore these relationships. Such efforts promise to provide deeper insights into the factors students weigh in choosing which colleges to attend.

---

[1] This study does not test or validate the concept of student-institution fit.

The results also imply that the college choice process has developmental stages over which some measures are not monotonic, and during which influential repeated measures change impact. For example, the fact that talking more to different sources as they proceeded through high school, internal resources (parents and friends) during the 9th and 10 grade and external resources (counselors and teachers) in the 11th and 12th grade, may indicate that students are becoming more independent and exercise more individual control over the college choice process as they mature. More work on a developmental model of college choice is needed.

Developing a better sense of the steps through which students progress as they move through the process of college choice would be useful to both public policy makers and institutional policy makers. An understanding of the process might aid the design of effective strategies to encourage more students to continue their education after high school, and to assist students in making good -- or better -- decisions about which college or university to attend.

REFERENCES

Alexander, K., et al. (1978). Status composition and educational goals: An attempt at clarification. Washington, D. C.: National Institute of Education. (ED 160 537)

Babbie, E. R. (1973). Survey Research Methods. Belmont, CA.: Wadsworth Publishing.

Bishop, J. (1977). The effect of public policies on the demand for higher education. Journal of Human Resources, 5(4), 285-307.

Bowers, J. & Pugh, R. (1973) Factors underlying college choice by student and parents. Journal of College Student Personnel, 14, 220-224.

Brown, K. G. (1982, May). Postsecondary plans of high-school seniors in 1972 and 1980: Implications for student quality. Presented at the AIR Forum, Denver. (ED 220 060)

Carpenter, P. G. and Fleishman, J. A. (1987). Linking intentions and behavior: Australian students college plans and college attendance. American Educational Research Journal, 24(1), 79-105.

Chapman, R. G. and Jackson, R. (1987). College choices of academically able students: The influence of no-need financial aid and other factors, Research Monograph No. 10. New York: The College Board.

Coleman, J. S. (1966). Peer culture and education in modern society. In T. M. Newcomb and E. K. Wilson (eds.), College peer groups: Problems and prospects for research. Chicago: Aldine Publishing Company.

Conklin, M. E. and Dailey, A. R. (1981). Does consistency of parental encouragement matter for secondary students? Sociology of Education, 54, 254-262.

Corrazini, A. J., et. al. (1972). Determinants and Distributional aspects of enrollment in U.S. higher education. Journal of Human Resources, 7, 26-38.

Dahl, R. W. (1982, June). College attendance and institutional choice. Results from the Kentucky longitudinal study. Paper presented at the Annual Forum of the Association of Institutional Research, Denver, CO. (ED 220 227)

Dolence, M. (1991). Setting the context for the evaluation of recruitment and retention programs. In D. Hossler (ed.), Evaluating Recruitment and Retention Programs, New Directions for Institutional Research, No. 70. San Francisco: Jossey- Bass, Inc.

Douglas, P., et al. (1983). Factor in the choice of higher educational institutions by academically gifted seniors. Journal of College Student Personnel, 24, 540-545.

Ebberly, C.G. (1987, March). Information sources used by high school seniors. Paper presented at the Annual Meeting of the American Association of Counseling and Development. New Orleans, LA.

Ekstrom, R. B. (1985). A descriptive study of public high school guidance: Report to the commission for the study of precollegiate guidance and counseling. Princeton, N.J.: Educational Testing Service.

Elsworth, G. and others (1982). From high school to tertiary study: Transition to college university in Victoria. Hawthorn, Victoria: Australian Council on Education.

Falsey, B. and Heyns, B. (1984). The college channel: Private and public schools reconsidered. Sociology of Education, 57, 111-122.

Gilmour, J., and others (1978). How high school students select a college. Pennsylvania: Pennsylvania State University. (ED 208 705)

Hause, J. C. (1969). Ability and schooling as determinants of lifetime earnings, or if you're so smart, why aren't you rich. American Economic Review, 59, 289-298.

Hossler, D. and Stage, F. (1987). A analysis of student and parent data from the pilot year of the Indiana College Placement and Assessment Center. Bloomington, IN.: Indiana College Placement and Assessment Center.

Hossler, D., Braxton, J. and Coopersmith, G. (1989). Higher Education: Handbook of Theory and Research, Vol. 5. New York: Agathon Press.

Hossler, D., Schmit, J., & Bouse, G. (1990). The impact of family knowledge of financial aid upon the postsecondary plans and family savings behavior. Seventh Annual Meeting of the Student Financial Aid Research Network Conference, Washington, D.C., May, 1990.

Hossler, D., Vesper, N., & Bouse, G. (1991). Factors associated with parental college savings behaviors. Paper presented at the Annual Meeting of the American Educational Research Association, April, 1991, Chicago, IL.

Hossler, D. and Stage, F. (in press). Family and high school experience factors' influence on the postsecondary plans of ninth grade students.

Hossler, D., Bateman, M. & Clark, C. An evaluation of a home visit admissions program. College and University.

Jackson, G. A. (1978). Financial aid and student enrollment. Journal of Higher Education, 49, 548-574.

Jackson, G. A. (1986, February). MISSA, the fall of Saigon, and college choice, 1972 to 1980. Paper presented at the Annual Meeting of the Association for the Study of Higher Education, San Diego, CA.

Joreskog, K. and Sorbom, D. (1989). LISREL VII: Analysis of Linear Structural Relationships. Mooresville, IN: Scientific Software.

Keller, M. J. and McKewon, M. P. (1984). Factors contributing to postsecondary enrollments decisions of Maryland National Merit Scholarship Semifinalists. Paper presented at Annual Meeting of the Association for the Study of Higher Education, Chicago.

Konnert, W. and Giese, R. (1987). College choice factors of male athletes at private NCAA Division III institutions. College and University, 63(1), 23-48.

Kuntz, S. S. (1987, April). A study of student's cognitive structure for colleges. Paper at the Annual Meeting of the American Educational Research Association, Washington, D.C.

Lay, R. and Maguire, J. (1980). Identifying the competition in higher education. College and University, 56(1), 53-65.

Lewis, G. H. and Morrison, J. (1975). A Longitudinal Study of College Selection, Tech. Report No. 2. Pittsburg: School of Urban Public Affairs, Carnegie-Mellon University.

Litten, L. H. (1979). Market structure and institutional position in geographic market segments. Research in Higher Education, 11(1), 59-83.

Litten, L. H., Sullivan, D., & Brodigan, D. (1983). Applying market research in college admissions. New York: The College Board.

Litten, L. H. & Hall. A. E. (1989). In the eyes of our beholders: Some evidence on how high-school students and their parents view quality in colleges. Journal of Higher Education, 60(3), 302-324.

Maguire, J. and Lay, R. (1981). Modeling the college choice process. College and University, 56(2), 123-139.

Mare, R. D. (1980). Social background composition and educational growth. Demography, 16, 55-71.

Manski, C. F. and Wise, D. A. (1983). College choice in America. Cambridge, Mass: Howard University Press.

Muffo, J. A. (1987). Market segmentation in higher education: A case study. Journal of Student Financial Aid, 17(3), 31-40.

Murphy, P. E. (1981). Consumer buying roles in college choice. College and University, 57, 141-150.

Parents, Programs and Pennsylvania Student Plans. (1984). Harrisburg, PA: Pennsylvania Association of Colleges and Universities.

Perlman, R. (1973). The Economics of Education: Conceptual Problems and Policy Issues. New York: McGraw-Hill Book Co.

Peters, W. B. (1977). Fulfillment of short-term educational plans and continuance in education. Washington, D.C.: National Center of Educational Statistics.

Rumberger, R. W. (1982). Recent high school and college experiences of youth: Variations by sex, race and social class. Youth and Society, 13, 449-470.

Russell, C. N. (1980, September). Survey of grade 12 students' postsecondary plans and aspirations. Manitoba, Canada: Department of Education. (ED 201 225)

Schmit, J. (1991). An empirical look at the search stage of the student college choice model. Unpublished doctoral dissertation. Bloomington, IN.: Indiana University.

Sewell, W. H., et al. (1972). The educational and early occupational status attainment process: Replication and revision. American Sociological Review, 40(1), 1014-1027.

Solmon, L. C. and Taubman, P. J. (1973). Does college matter? New York: Academic Press.

Soper, E. L. (1971). A study of factors influencing the postsecondary educational plans of Utah high school students. Washington, D.C.: National Center for Educational Statistics.

Stage, F. & Hossler, D. (1989). Differences in family influence on the college plans of high school males and females. Research in Higher Education, 30(3), 301-315.

Stewart, N. R., et al. (1987, April). Counselor impact on college choice. Paper presented at the Annual Meeting of the American Educational Research Association, Washington, D.C.

Tillery, D. (1973). Distribution and differentiation of youth: A study of transition from school to college. Cambridge, MA: Ballinger.

Trent, J. and Medsker, L. (1967). Beyond high school: A psychological study of 10,000 high school graduates. San Francisco: Jossey-Bass.

Tuttle, R. (1981). A path analytical model of the college going decision. Boone, North Carolina: Appalachian State University. (ED 224 434)

Vesper, N. & Hossler. (in press). Effects of mother's education and employment upon the educational plans of high school students. Paper presented at the Annual Meeting of the American Educational Research Association, April, 1990, Boston.

Vesper, N., Hossler, D. & Schmit, J. (1991). The changing importance of college attributes: A longitudinal study. Paper presented at the Annual Meeting of the American Educational Research Association, April, 1991, Chicago, IL.

Yang, S. W. (1981, July). Rural youth's decisions to attend college: Aspirations and realizations. Paper presented at the Annual Meeting of the Rural Sociological Association, Guelph, Ontario. (ED 207 765)

Table 1
Independent Variables

Family Income
9th grade

PINCOME
mean = 7.17
s.d. = 2.23
min = 2.00
max = 10.00

(1) < 10000
(2) 10000-14999
(3) 15000-19999
(4) 20000-24999
(5) 25000-29999
(6) 30000-34999
(7) 35000-39999
(8) 40000-44999
(9) 45000-49999
(10) > 49999

Parents education
9th grade

MEDUC (moth.)	FEDUC (fath.)
mean = 4.86	mean = 5.28
s.d. = 1.10	s.d. = 1.27
min = 1.00	min = 2.00
max = 7.0	max = 7.00

(1) < 8th grade
(2) 8th grade
(3) some high school
(4) high school
(5) some college
(6) college
(7) post-graduate

Aspirations
9th grade

SEDEXP - (stu.)	PEDEXP (par.)
mean = 5.53	mean = 4.92
s.d. = 2.05	s.d. = 1.86
min = 0.00	min = 0.00
max = 8.00	max = 8.00

(0) high school only only
(1) vocational-technical
(2) two-year college
(4) four-year college
(6) masters degree
(8) professional degree

Talk to significant others
9th grade
TALK1 - parents
TALK2 - friends
TALK3 - teachers
TALK4 - counselors
TALK4 - others
10th grade
STALK1 - parents
STALK2 - friends
STALK3 - teachers
STALK4 - counselors
STALK4 - others
11th grade
MTALK1 - parents
MTALK2 - friends
MTALK3 - teachers
MTALK4 - counselors
MTALK4 - others

(0) no
(1) yes

Table 1, continued
Independent Variables

Grade point average 9th grade GPA mean = 4.29 s.d. = 0.64 min = 3.00 max = 5.00	(1) F (2) D- to D+ (3) C- to C+ (4) B- to B+ (5) A- to A+
Count of sources of information 10th grade SOURCES mean = 2.72 s.d. = 1.20 min = 1.00 max = 5.0	count of number of sources from family, friends, school agents, media sources, athletics, colleges
College learning activities 11th grade COLLRN mean = 5.00 s.d. = 1.23 min = 1.00 max = 6.00	activities score from doing nothing, asking for information from local sources, picking up information, writing for information, campus visits
Count of schools 12th grade CNT12 mean = 1.10 s.d. = 1.7 min = 0.00 max = 5.00	number of schools listed from 0 to 5
Gender SEX mean = 0.55	(0) male (1) female
Race RACE mean = 0.96	(0) Black (1) White

Table 2
Differences in model variables
By XFACTORs and GROUP membership

Variable	XFACTOR1	XFACTOR2	XFACTOR3	XFACTOR4
TALK1			2<1<0	
TALK2			0<1<2	
PEDEXP		1<0<2		
PINCOME		1<0<2		1<0<2
MEDUC		0<1<2		1<0<2
FEDUC	1<0<2	1<0<2		1<0<2
MTALK4			1<0<2	
MTALK5			2<0<1	

The symbol a<b<c denotes the order
of the means for the Groups a, b, c

Table 3
Results of discriminant analysis
Standardized coefficients by functions
Listed from low to high significance

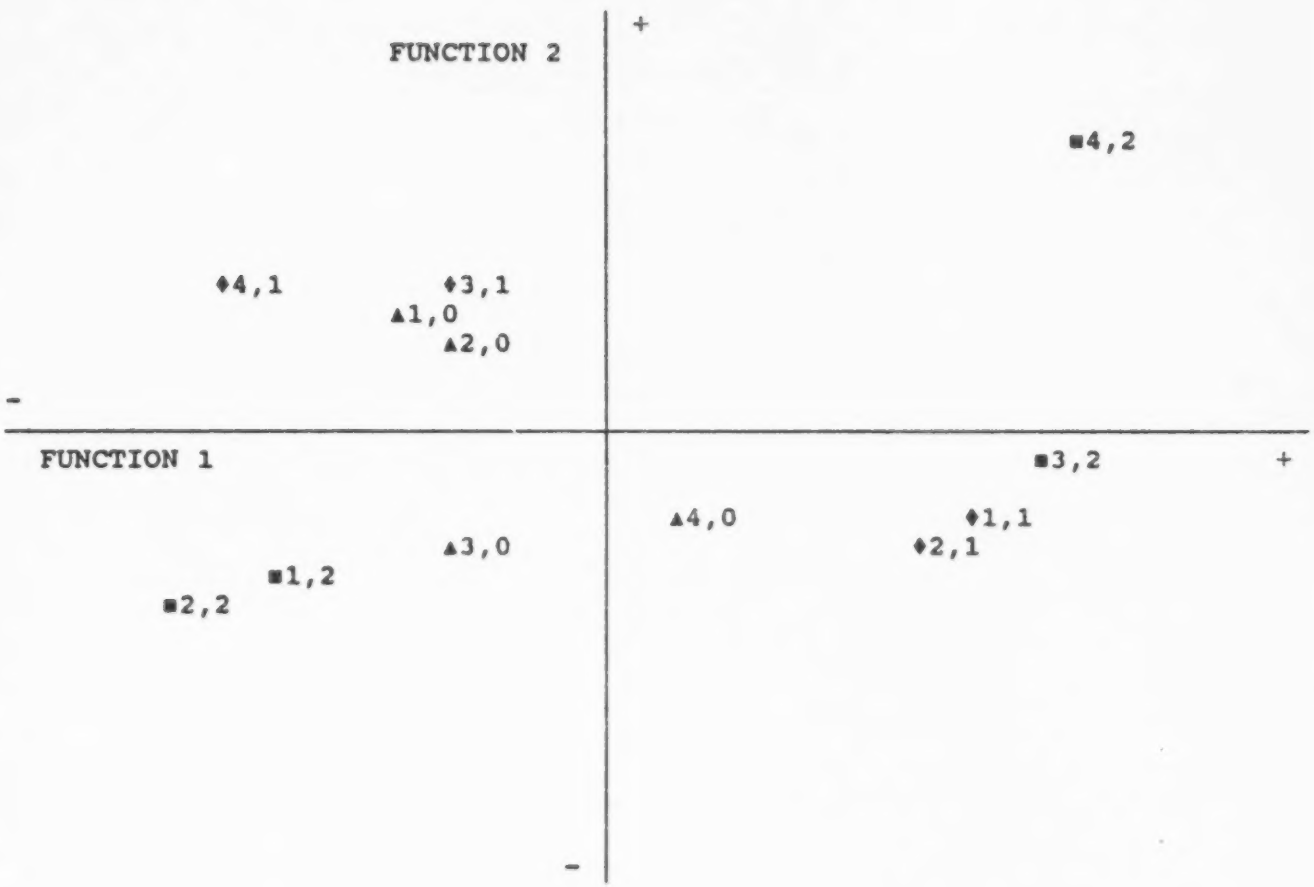
	Variable	Function 1	Function 2
XFACTOR1			
	SOURCES	0.22	-0.58
	COLLRN	0.41	0.28
	TALK2	-0.58	0.47
	MTALK4	0.41	-0.47
	FEDUC	0.60	0.50
Percent of variation accounted for		77%	23%
XFACTOR2			
	SEX	-0.31	-0.29
	COLLRN	-0.39	0.22
	PEDEXP	0.46	0.28
	MTALK4	0.48	-0.15
	MEDUC	-0.08	1.01
	FEDUC	0.71	-0.36
Percent of variation accounted for		75%	25%
XFACTOR3			
	TALK1	-0.60	0.79
	MTALK4	0.59	0.62
	FEDUC	0.33	0.53
Percent of variation accounted for		69%	31%
XFACTOR4			
	SEX	-0.52	-0.12
	SOURCES	-0.33	-0.30
	PEDEXP	-0.18	0.48
	MTALK5	0.25	-0.42
	PINCOME	-0.03	0.82
	MEDUC	0.36	0.41
	FEDUC	0.70	-0.57
Percent of variation accounted for		62%	38%

Table 4
Variables from Table 3 listed
by XFACTOR and GROUP membership
according to LOW (L) or HIGH (H) values
on discriminating variables

	Variable	Group 0	1	2
XFACTOR1			(+)[1]	
	SOURCES	L	H	H
	COLLRN	H	H	L
	TALK2	H	L	L
	MTALK4	L	H	H
	FEDUC	H	H	L
Number of cases		55	31	24
XFACTOR2			(+)	
	SEX	L	L	H
	COLLRN	H	L	L
	PEDEXP	H	H	L
	MTALK4	L	H	H
	MEDUC	H	L	L
	FEDUC	L	H	H
Number of cases		67	30	13
XFACTOR3				(-)
	TALK1	L	H	H
	MTALK4	L	H	L
	FEDUC	L	H	L
Number of cases		51	41	10
XFACTOR4			(+)	
	SEX	L	L	H
	SOURCES	L	L	H
	PEDEXP	H	L	L
	MTALK5	L	H	H
	PINCOME	H	L	L
	MEDUC	H	H	L
	FEDUC	L	H	H
Number of cases		85	18	7

[1] The symbol (*) means that this group was distinguished by Function 1, the most discriminating function, and that its numeric sign was + or - as indicated.

Figure 1.
Plot of each group and each factor
by discriminating functions



XFACTORs and GROUPs listed as #,#
(4,2 means 4th factor and group 2)

▲ marks GROUP0 across the XFACTORs
(GROUP0 includes lowest discrepancy scores)
♦ marks GROUP1 across the XFACTORs
(GROUP1 includes moderate discrepancy scores)
■ marks GROUP2 across the XFACTORs
(GROUP2 includes high discrepancy scores)